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Shaping Performance: Do International Accreditations and Quality Management Really Help?

Stefano Nigsch, Andrea Schenker-Wicki

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University of Zurich, Plattenstrasse 14, CH-8053 Zurich,
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Contact Details

Stefano Nigsch

University of Zurich

Department of Business Adminstration

Plattenstrasse 14, CH-8032 Zurich, Switzerland

stefano.nigsch@business.uzh.ch

Tel.: +41 44 634 29 28

Fax: +41 44 634 49 15

SHAPING PERFORMANCE: DO INTERNATIONAL ACCREDITATIONS AND QUALITY MANAGEMENT REALLY HELP?[1]

ABSTRACT

In recent years, international accreditations from private providers have gained importance among business schools all over the world. Higher education managers increasingly see these accreditations as a way of assuring and developing quality in order to comply with international standards, enhance performance, and increase reputation. However, given that an accreditation process requires a great deal of resources and that it might increase bureaucratization and control, international accreditations remain highly disputed in academia. This paper contributes to the discussion, providing quantitative empirical evidence regarding the effect of international accreditations on the research performance of business schools. On the basis of an international survey, we analyse how the acquisition of an AACSB and/or EQUIS accreditation affects the institutions' position in the Top 1000 Business School Ranking of the Social Science Research Network, as compared to other quality management approaches. We find that international accreditations are positively related to research performance, while other forms of quality management do not exhibit any significant relationship to ranking positions. These results point to the importance of professional coaching in quality management. Because of AACSB and EQUIS's high standards concerning a coherent strategy and the quality of faculty, applying for an international accreditation seems to be a useful way to improve a business school's research performance.

KEYWORDS

Higher education, business school, accreditation, quality management, AACSB, EQUIS

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INTRODUCTION

The rise of quality management has been one of the most influential developments in higher education over the last 30 years. Stensaker (2003: 152) observes an "inflation" of quality management practices as new methods and instruments are introduced, complementing – but not replacing – existing mechanisms. The reasons for this are twofold. First, the emergence of "new managerialism" approaches in higher education (Deem & Brehony 2005) and the increasing focus on institutional performativity (Ollsen & Peters 2005) has led universities to implement internal quality management systems based on concepts and models from the business world. Secondly, many governments have started promoting external quality assurance in higher education as an accountability tool in order to ensure that public funds are properly invested (Massaro 2010, Harvey & Newton 2004). During the 1980s and 1990s, national quality assurance systems emerged in several countries, and soon began coordinating their activities at the international level within regional and global associations (Woodhouse 2004). [1]

In this context, national and international accreditations have become increasingly popular both as an external quality assurance tool and an internal quality management approach (Stensaker 2011). Among business schools in particular, the U.S. model of institutional accreditations provided by private agencies has spread worldwide. In most countries, these accreditations are not compulsory but serve as a quality label and a competitive advantage in the international struggle for the best students and outstanding researchers (Schwarz & Westerheijden 2005). As business schools need to fulfil a set of standards in order to be accredited, accreditations represent an incentive to optimize the institutions' internal structures and processes or to invest resources more strategically, improving quality, efficiency, and overall performance.

However, the effect of accreditations remains highly disputed in academia. Many scholars see accreditations as a restriction on academic freedom, a fruitless bureaucratic burden, and an impediment to adaptation and innovation (Harvey 2004, Julian & Ofori-Dankwa 2006, Scheele 2004). Others see accreditations in a positive way and stress their contributions to strategic planning, organizational effectiveness, and reputation (Zammuto 2008, Lejeune & Vas 2009). In both cases, sound empirical evidence for the effect of accreditations is scant. To our knowledge, only a study by Lejeune & Vas (2009) has analysed the impact of

accreditations with quantitative survey data. The authors found a positive impact of EQUIS accreditations on organizational culture and effectiveness. However, these results were solely based on the perceptions of the business schools' deans and did not account for objective performance measures. Similarly, relatively few studies have provided empirical evidence for the positive or negative effects of other quality management approaches in higher education (Kleijnen et al. 2011). Notably scarce are quantitative international studies and contributions that focus on quality management in research besides teaching and learning (Harvey & Williams 2010b).

In the present study, we address these gaps and provide empirical evidence for the impact of accreditations in the higher education sector. We focus on business schools and the two main international accreditation agencies in this field: the Association to Advance Collegiate Schools of Business (AACSB) in the United States, and the European Quality Improvement System (EQUIS). Today, the research activities of a higher education institution have become crucial for its overall reputation. Not only does research performance strongly affect the institution's position in international rankings (Buela-Casal 2007, Horta 2009), but business schools with strong research activities are also able to attract well-known professors and high-performance students, enabling them to successfully compete at the international level. For these reasons, we analyse business schools' research performance as a dependent variable. Our overall research question can be stated as follows: *How does the acquisition of an international accreditation affect a business school's reputation - measured as research performance - compared with other quality management approaches?*

This paper contributes in several ways to the current debate on quality management in higher education. On the basis of previous literature and a short analysis of the standards required by accreditation agencies, it explores how the acquisition of an international accreditation may affect a business school's research performance. The paper then presents results from an international survey on quality management among business school leaders and provides quantitative empirical evidence of how international accreditations by private agencies are related to the institution's position in a university ranking centered on research. With its focus on research performance as a dependent variable, the study considers an important task of business schools aside from teaching and learning that has received little attention in the quality management literature. Moreover, the empirical analysis includes other forms of

quality management beside accreditations and thus allows for a first rough comparison between different approaches.

Today, the various activities related to quality management within higher education institutions require significant financial and personal resources (Stensaker 2003). It is therefore important to assess how different forms of quality management influence an institution's performance. Knowing which approaches lead to the best results may help governments and higher education managers optimize their strategies for quality assurance and quality development, thereby increasing the reputation, productivity, and cost-efficiency of business schools and other higher education institutions.

LITERATURE REVIEW

Quality management and its impact on higher education

Building on the definition provided by Grant et al. (2004), we define quality management as comprising all activities and processes that are deliberately carried out to design, evaluate and improve teaching, learning, research, and administrative functions within higher education institutions. Quality management has always existed in academia. However, with the diffusion of new public management and the growing need for external accountability, many higher education institutions have begun implementing quality management systems based on concepts and models from the business world (Newton 2007, Marginson & van der Wende 2007). Most of these systems follow the philosophy of Total Quality Management (Becket & Brookes 2008), and many of them adopt either the Malcolm Baldrige Criteria, the Excellence Model of the European Foundation for Quality Management (EFQM), or the ISO-9000 standards. [2] Quality management systems based on concepts from the business world have the advantage of being easily accepted by external stakeholders and are reported to improve the efficiency of administrative processes (Brookes & Becket 2007). However, they do not always account for elements specific to higher education institutions, such as academic freedom (Thalner cit. in Houston 2008: 65).

In recent years, a large and diverse body of literature on quality and quality management in higher education has appeared (for literature reviews see Harvey & Williams 2010a/2010b, Pratasavitskaya & Stensaker 2010). Besides intensive discussions on the concept of quality in

higher education (Harvey & Green 1993, Lomas 2001, Van Kemenade et al. 2008), scholars have analysed different quality management instruments (Dill 2000, Wiklund et al. 2003, Eaton 2006, Cheng 2009) and conducted case studies of single universities (Baldwin 1997, Rasmussen 1997). Another group of contributions has studied the national quality assurance systems in different countries, focusing on the origins and scopes of these systems as well as their advantages and disadvantages (Smeby & Stensaker 1999, Schenker-Wicki 2002).

A relatively small stream of literature has analysed the impact of the new forms of quality management within higher education (for literature reviews see Kis 2005, Harvey & Newton 2004). Although higher education managers now devote more attention to the quality of teaching and learning (Saarinen 1995), it remains unclear whether quality management really enhances educational quality (Stensaker 2003). Similarly, the effect of quality management systems on the overall performance of higher education institutions remains disputed (Tambi et al. 2008). Missing evidence for the impact of quality management is partly due to methodological problems: according to Harvey and Newton (2004), it is impossible to control for all relevant factors when mapping causal relationships. Moreover, the effect of quality management cannot be easily separated from other factors that may influence changes in higher education (Shah 1997).

Brennan and Shah (2000) present a conceptual framework to explain the relationship of quality management and institutional change in the higher education sector. They consider three forms of impact: impact through rewards, impact through changing policies and structures, and impact through changing higher education cultures. The authors conclude that the introduction of new quality assessment systems has been accompanied by a shift in power that has favored the institutional level at the expense of the basic unit. Moreover, both managerial and market concerns have acquired more importance while disciplinary academic concerns seem to become less relevant.

Other studies have observed that new forms of quality management lead to higher bureaucratization (Kogan et al. 2000) and cause disproportionate costs compared to unclear effects (PA Consulting 2000). Lomas (2004) points out the issue of opportunity costs: the high amount of financial resources needed to implement and maintain a quality management system may be otherwise better invested. Accordingly, Temple (2005) holds a very critical view of quality management systems in higher education and suggests that higher education

institutions may manage themselves more efficiently without external quality management concepts.

Among the positive effects of the new quality management approaches, scholars often mention an increased transparency (Stensaker 2003). Transparency may, however, foster control by governments and other external authorities. Moreover, higher education institutions are tempted to present their achievements in a more impressive and visible way (Dill 2000). Academics may adapt to fulfil new requirements because they are forced to do so, without really believing that quality management is of any use.

Accreditations and their impact on higher education

Recently, accreditations have become an important way of ensuring the quality of higher education institutions (Stensaker 2011). At the basic level, the term "accreditation" describes a process by which an institution obtains the authorization to conduct educational programs recognized by the state or by another authority. In other cases, however, it might refer to a quality label that serves as an orientation guide for students and academics. In both cases, the accreditation process makes use of a benchmarking method, refers to specific standards, and aims at a "yes or no" verdict (Haakstad 2001).

Accreditations are provided by the state or by private agencies, and may focus on a specific educational program or an institution as a whole. In many European countries, accreditations by national authorities are compulsory, while in the United States they are traditionally provided by private agencies (Schwarz and Westerheijden 2005). However, among business schools in particular, the American model of private accreditation is gaining in importance all over the world. It is generally assumed that the two main accreditations in this field, AACSB and EQUIS, contribute substantially to a business school's reputation (Trapnell 2007, Urgel 2007).

The true effects of accreditations are disputed in academia. Expressing their concerns in a provocative James Bond metaphor, a group of scholars perceive accreditations as a "License to Kill" (Scheele 2004). On the basis of a qualitative survey among academics and managers in Britain, the United States, and Canada, Harvey (2004: 207) concluded that, in some cases, the accreditation process represents "a power struggle that impinges on academic freedom" and imposes an extensive bureaucratic burden. Accreditations shift power from academics to

bureaucrats, increasing controls on those who provide education. They may also limit innovation opportunities and impede the pedagogic improvement process: Julian and Ofori-Dankwa (2006), who focus their analysis on AACSB accreditations, argue that the accreditation process may hinder a business school's capability to adapt to a "discontinuous" and "turbulent" environment, characterized by technical innovations and increasing competition from corporate and virtual universities.

Countering the arguments of Julian and Ofori-Dankwa (2006), Romero (2008) states that AACSB accreditations encourage flexibility and creativity. Although the author admits a "lack of published, hard and systematic data" on the effects of accreditation (Romero 2008: 246), he argues that accreditations provide incentives for strategic development, which may in turn improve performance (Miller & Cardinal 1994). Moreover, international accreditations are expected to enhance the prestige and outlook of higher education institutions, making them more attractive for students and external partners (Temponi 2005). According to Zammuto (2008) the value of such accreditations as a quality differentiator is rising among part-time working students and international students.

On the basis of a survey among 31 deans and directors of EQUIS-accredited schools, Lejeune and Vas (2008) assert that accreditations have a positive impact on performance. Rather than increasing the student's satisfaction with curricula, accreditations seem to improve a business school's ability to acquire resources – particularly qualified faculty and academic partners – thus enhancing its performance. In a later study, Lejeune (2011) presents a capability-based model to explain how continuous improvement through accreditation is possible. He distinguishes three core capabilities that lead to competitive advantages for business schools: strategizing, changing resources and activities, and branding. According to the author, EQUIS accreditations positively influence all three capabilities.

International competition, reputation and research performance

Today, higher education institutions act internationally, cooperating and competing for funds, students, and high profile researchers on a global scale (Teichler 2004). In this context of intensifying competition, an institution's international reputation has become an important condition for success. Reputation builds primarily upon high-quality education and excellent research activities (Marginson 2006), and is often measured by national and international university rankings (Bowman and Bastedo 2011, Hazelkorn 2011). Although these rankings

have been criticized both for their methodology (see for example Toutkoushian et al. 2003) and their effects at the institutional and systemic level (West 2009, Gioia and Corely 2007), they are today an important element of higher education management with a relevant social impact (Meredith 2004). Politicians, higher education managers, researchers, and students increasingly use rankings in order to compare higher education institutions and make funding decisions, choose a place to work, or decide where to study.

Rankings rely heavily on the research capabilities of universities (Buela-Casal 2007, Horta 2009), and indicators such as publication numbers and citation indexes have become important factors affecting reputation. In this context, higher education institutions need to foster research performance if they want to improve their reputation and successfully compete at the international level. For this reason, in this study we focus on a business school's research activities and analyse how institutional accreditations and other forms of quality management might affect research performance.

HYPOTHESES

Effects of international accreditations on research performance

In line with Romero (2008) and Lejeune and Vas (2008), we expect the accreditation process to help business schools improve their research performance. Although both AACSB and EQUIS accreditations focus on teaching, they set clear standards that concern the strategic management of business schools, their organizational processes and the quality of faculty. Business schools applying for an accreditation will have a strong incentive to take specific measures in order to meet these requirements. In doing so, they will presumably improve their research performance. While analysing this assumption using AACSB and EQUIS standards and requirements (AACSB 2012, EQUIS 2012), we identified six different ways in which institutional accreditations may lead to a higher research performance.

1. Mission statement and strategy development: Both AACSB and EQUIS require a clear mission statement that is known and shared by all the business school's faculty and collaborators. This means that institutions applying for accreditation need to develop clear ideas about the services they offer and the market they serve, improving their ability to successfully compete (Zammuto 2008). Moreover, mission statements should include a clear

commitment to high quality research, which may lead business schools to foster research activities, either by allocating more resources or making research more effective. Accredited institutions are also expected to develop clear strategies for how to reach their goals and invest their resources. In line with the strategic management literature (see for example Pearce II et al. 1987, Mosakowski 1993) we argue that having a good strategy is central to the success of a business school. Lejeune (2011) agrees, noting that strategizing is one core capability of business schools that can be fostered through the accreditation process.

2. Effective organization and management: EQUIS expects a business school to have "effective and integrated organization for the management of its activities" (EQUIS 2012: 7), while AACSB states that there should be "well-documented and communicated processes in place to manage and support faculty members over the progression of their careers consistent with the school's mission" (AACSB 2012: 53). Both standards represent an incentive for business schools to improve their organizational effectiveness, release faculty members and scientific collaborators from administrative tasks and create an environment that fosters good research.

3. Data collection: In order to meet the accreditation requirements, business schools must systematically collect data that reflects in detail the quality of teaching, learning, and research at their institution. Data collection may contribute in two ways to higher research performance: first, business schools may recognize their strengths and weaknesses and find out where further optimization is needed; second, accreditations offer a strong incentive to improve and systematize the data collection process, enhancing organizational effectiveness. In a case study of the University of Central Florida's College of Business Administration, Moskal et al. (2008) describe how the implementation of a new data collection system led to more systematic and effective management of program assessment.

4. Faculty requirements: AACSB and EQUIS set high standards concerning the qualification of faculty in teaching and research. As a result, business schools applying for accreditation may be more apt to recruit high-profile academics and pay them accordingly. Hedrick et al. (2010) found that in faculties with AACSB accredited programs, researchers were paid more and performed better than in those without accreditation. The quality of the academic staff is indeed the most important factor for the success of a higher education institution in the long term (Liefner 2003).

5. External cooperation: The EQUIS accreditation in particular calls for a business school to cooperate internationally and foster connections to the corporate world. External connections and cooperation with other higher education institutions and the corporate world may contribute to faculty development and productive research (Lejeune & Vas 2009). Moreover, once accreditation has been achieved, the label's prestige and branding effects can make it easier to find appropriate partners (Temponi 2005).

6. Internal integration: According to Lejeune and Vas (2009), the accreditation process is likely to increase internal cohesion between individuals who mobilize themselves in order to meet accreditation standards and earn the label. Higher education institutions are typically composed of multiple basic units with a high degree of autonomy and individual views or perceptions. In this context, accreditations may foster cooperation within the business school, consensus on goals, and a common understanding of problems to be solved. As a consequence, the business school may fulfil its tasks in teaching and research in a more efficient way.

On the basis of these considerations, our main hypothesis can be stated as follows:

Hypothesis 1: The acquisition of one or more international accreditations leads to a higher research performance of business schools.

Effects of other forms of quality management on research performance

Outside of the diffusion of international private accreditations, compulsory accreditations by state agencies have also become important in many countries (Haakstad 2001). These "national accreditations" are particularly relevant for accountability and may also serve as a quality management tool. However, they differ considerably from international accreditations like AACSB or EQUIS. In general, national accreditations provide a "right to exist" (Schwarz and Westerheijden 2005: 2), and do not attest to outstanding achievements in teaching and research. Among other differences, they set lower standards than international accreditations regarding the quality of faculty and the intensity of external cooperation. Moreover, national accreditations do not necessarily require clear mission statements and strategies, and focus less on research performance compared to teaching. For these reasons, we do not expect them to be significantly related to research performance.

Hypothesis 2: Being accredited by a national authority has no significant effect on the research performance of business schools.

Outside the context of international accreditations, the implementation of a quality management system may contribute to higher research performance. In most cases, these systems are based on concepts and models from the business world and imply the creation of a separate entity within the business school charged with coordinating various quality management activities. Drawing on the principal-agent theory of Jensen and Meckling (1976), we assume that having such an entity in charge of quality management may serve as an incentive for a higher education institution's staff to work in a more diligent way. Moreover, systematic data collection may help higher education managers to identify potential areas for further improvement. Although quality management systems often involve a high degree of bureaucratization (Kogan et al. 2000), they are reported to have a positive impact on the efficiency of administrative processes (Brookes & Becket 2007). Increased efficiency may enable academic personnel to devote more time to research, in turn contributing to higher research performance.

In order to assure that quality management processes are not limited to teaching and learning, we consider only quality management systems that explicitly include a business school's research activities. As accreditations and quality management both require systematic data collection and aim to improve organizational processes, we further expect the two approaches to be positively correlated with each other. For example, a functioning quality management system could ease the accreditation process. At the same time, achieving accreditation may serve as an incentive for a business school to introduce a quality management system. This leads us to the following two hypotheses:

Hypothesis 3a: Business schools that have implemented a quality management system that covers their research activities exhibit a higher research performance.

Hypothesis 3b: Business schools that have implemented a quality management system are more likely to have achieved an international accreditation.

Evaluating and discussing research projects and contributions within a business school's faculty is another important form of quality management. According to Kaufmann (2009), regular meetings or mentoring as well as informal and spontaneous feedback contribute to quality assurance and quality development in higher education. We call these forms of quality

management "feedback loops," and expect them to improve a business school's research performance. In the higher education literature, the concept of feedback loops generally refers to the opinion of external stakeholders and course evaluations by students (Venkatraman 2007, Becket and Brookes 2006). However, in the present study we consider only faculty-internal feedback loops for research projects. As international accreditations contribute to integration and cooperation within business schools (Lejeune and Vas 2009), we expect such feedback loops to be positively correlated to the achievement of an AACSB or EQUIS accreditation. The presence of feedback loops can be seen as an indicator for the level of integration within the faculty and represent one of the mechanisms through which accreditations improve research performance. These considerations can be expressed with the following hypotheses:

Hypothesis 4a: Business schools with internal feedback loops for research projects exhibit a higher research performance.

Hypothesis 4b: Business schools with internal feedback loops for research projects are more likely to have achieved an international accreditation.

METHODS

The empirical analysis of this paper focuses on business schools. Business schools can be autonomous higher education institutions or individual departments within larger universities that specialize in teaching and research in the broad scientific field of economics. Beyond classic degree programs, they may offer a Master of Business Administration (MBA) course and Executive Education programs. For our statistical population, we used the higher education institutions registered in the *Top 1000 Business School Ranking* of the *Social Science Research Network* (SSRN). On the SSRN website, researchers from all over the world can publish their research results at an early stage as working papers. Since 2005, the SSRN has analysed these publications in order to measure and compare the performance of higher education institutions. SSRN rankings exist for three types of institutions: (i) *Business Schools,* (ii) *Economics Departments* and (iii) *Law Schools*. They are based on the number of papers posted by a higher education institution in the SSRN eLibrary and the frequency with which these papers are downloaded. The rankings are updated every month and can be consulted for free.

Dependent variable

Using a similar approach to Aghion et al. (2010), we compare the research performance of business schools with their position in the *SSRN Top Business School Ranking*. In their international comparative study of university performance, Aghion et al. used the *Shanghai Academic Ranking of World Universities (ARWU)* as an indicator of the performance of a higher education institution. One of the most well-known international university rankings, the ARWU reflects the prestige and reputation of higher education institutions [3]. Black and Caron (2006) analyzed the SSRN ranking of law schools as a measure of research performance. They concluded that the SSRN rankings represent a valid and transparent instrument for measuring the output side of research performance. Because of their focus on working papers, they offer real time data and favor younger scholars and emerging schools. The SSRN rankings can therefore be seen as "leading" indicators of a faculty's influence, while traditional indicators such as reputation surveys and citation counts have a more "lagging" character (Black & Caron 2006: 112).

A problem that persists with the SSRN rankings is their high volatility in the lower positions. Just a few downloads of a working paper can cause an upward shift of 75 positions. For this reason, we randomly chose three monthly rankings between May 2010 and April 2011 to calculate an average ranking. Moreover, to test our model we needed only to consider the business schools that participated in the survey. Following Currie and Pandher (2011), who analyzed rankings of finance journals, we created four categories and classified the higher education institutions in our sample according to their absolute position in the entire ranking. Our four categories correspond to the classification used by the *Academic Journal Quality Guide* (Harvey et al. 2010) and represent the best 10% (world elite), the following 25% (above average ranking), the middle 40% (average ranking) and the last 25% (rather low ranking) (see table 1).

Table 1: Classification of the entire SSRN ranking in four categories

Category	**% in the SSRN ranking**	**Performance**
4	(10%) 1 to 150	World elite
3	(25%) 151 to 500	Above average
2	(40%) 501 to 1000	Average
1	(25%) 1000 and higher	Rather low
	Total ranks: 1 to 1342	

Independent variables

In order to obtain empirical data, we invited the business schools from the *SSRN Top Business School Ranking* to participate in an online survey about different aspects of quality management and accreditation. [4] We contacted more than 1,250 school directors via e-mail. Of these, 99 responded in the first round. In a second round, we contacted 75 school directors of the top 250 business schools by telephone and obtained 18 additional feedbacks. The total of 117 responses corresponds to a feedback rate of nearly 10%, which is rather low for online questionnaires in organizational research (Baruch & Holtom 2008).

Of the 117 institutions in the final sample, 41 were actually economic departments of universities registered as business schools on the SSRN website. The majority of the business schools (79%) were public institutions. Their size ranged from a few dozen to more than 14'000 students, and their budget accordingly from 80'000 to over 300 million USD. [5] On average, the business schools had around 2'100 full time students and a budget of 26.8 million USD. 42% of the institutions were located in Europe, 37% in the USA, 12% in Asia and 9% in other regions (Latin America, Africa and Oceania). Among the participating business schools, 46 had implemented a quality management system that covers research activities, including administrative processes and chair planning. 48 business schools were accredited by a national authority, while 59 of them achieved an international accreditation by AACSB or/and EQUIS. In order to measure more informal approaches to quality management, we asked if research contributions by faculty members were regularly evaluated and results discussed within the faculty. 88 business schools said they had this type of feedback loops for research projects. As our sample is very diverse, we expect that it well represents the population of business schools in general.

Control variables

Other variables might affect both a business school's research performance and the probability of being accredited and thus need to be included in our analysis. First, research performance may be influenced by the institution's size. The bigger a business school, the more resources it might have for producing and publishing papers on the SSRN network. In our analysis, we operationalize size with the number of full-time students.

Second, it is likely that research performance and the probability of being accredited are related to the institution's operating budget. The more financial resources a higher education institution has at its disposal, the more high-profile professors and assistants it can engage. In order to assess the relative wealth of a business school, we need to standardize its operating budget per number of students.

Third, it is important to control for the institution's mission and orientation. If a business school is not strongly oriented on research, it might be internationally accredited but still have few publications on SSRN. We expect that this would be the case especially if the business school does not offer a PhD program.

As a final control variable we include the offer of specific programs for managers and chief officers (Executive Education) in our model. Executive Education can allow for synergies between research and practice. New research insights may be presented in the courses and critically questioned by the students, who already have sound experience outside academia. These feedbacks can help optimising teaching and contribute to further research (Tushman et al 2007). Executive Education also enables business schools to widen their financial base and acquire more resources. Moreover, it may boost public awareness of the business school and contributes to its reputation. A summary of all the factors we include in our analysis is given in table 2.

Table 2: Factors and measurement levels

Name	**Factor**	**Measurement level**
Y (dependent)	Mean ranking position	Ordinal
X1 (independent)	International accreditation (AASCB and/or EQUIS)	Dummy
X2 (independent)	National accreditation	Dummy
X3 (independent)	Quality management system	Dummy
X4 (independent)	Feedback loops for research projects	Dummy
C1 (control)	Number of full-time students	Interval
C2 (control)	Operating budget per student	Interval
C3 (control)	Offer of PhD program	Dummy
C4 (control)	Offer of Executive Education program	Dummy

Statistical analysis

In order to analyse how accreditations, quality management and research performance are related to each other, we conducted an ordered-logit regression (see for example Cameron & Trivedi 2005, Agresti 2010). The ordered-logit model assesses the probability of an event occurring through a logistic and therefore non-linear regression function. It estimates the influence of independent factors on the probability of a business school being in a certain ranking category. A positive coefficient indicates that an additional unit of the corresponding independent factor increases the probability of being in a higher ranking category.

As in linear regressions, the independent factors of an ordered-logit regression should not exhibit much multicollinearity. In our sample, multicollinearity among independent factors was relatively weak. Moreover, ordered-logit regressions require a test of the proportional odds assumption. The test verifies that all independent factors exhibit the same coefficients across all ordinal categories of the dependent variable. The results of this test again confirmed that our model could be further analysed.

RESULTS

As table 3 shows, both the factors for the acquisition of an international accreditation and the presence of internal feedback loops for research projects exhibit positive and highly significant coefficients. In contrast, the effect of being nationally accredited and of having a quality management system implemented are almost zero and not significant. All four control variables exhibit significant coefficients that point in the expected direction. However, as the coefficients measuring the effect of the number of students and the budget-per-student are calculated from two continuous metric variables they cannot be directly compared to the other variables.

Table 3: Results of the ordered-logit regression

Ordered-logit basic model [a]		**Coeff. [b]**	**SE [c]**	**Wald [d]**
X1	International accreditation	1.631***	0.484	11.37
X2	National accreditation	-0.003	0.405	0.00
X3	Quality management system	-0.008	0.388	0.00
X4	Feedback loops	1.277***	0.479	7.10
C1	Number of students	0.553***	0.130	18.06
C2	Budget-per-student	0.068***	0.025	7.51
C3	PhD	1.379***	0.508	7.37
C4	Executive Education	0.882**	0.431	4.18

a. Dependent variable = 4 SSRN ranking categories
b. significance levels * < 0.1, ** < 0.05, *** < 0.01
c. SE = standard error
d. Wald = Wald Chi^2-Test statistics

Overall robustness of the model

In order to assess the overall robustness of our model we conducted a likelihood ratio test. The test estimates the extent to which our accreditation and quality management variables – taken together – have a significant influence on the dependent variable. The result of the likelihood ratio test was highly significant (at the 1%-level), which implies that the model is adequate (see table 4).

Table 4: Likelihood-ratio test for the ordered-logit model

Logit model	**-2 x (Log-LH [a])**	**LR Chi^2 [b]**	**Significance**
Only control variables	250.33		
Whole model	226.67	23.66	0.000

a. LH = Likelihood
b. LR = Log-likelihood-ratio test

Furthermore, with the pseudo-R^2 statistic it is possible to calculate approximately how much of the dependent variable's variation is explained by our model. Using the Nagelkerke-Pseudo-R^2 test, we obtained a value of 0.586, which constitutes a valid result (see table 5).

Table 5: Pseudo-R^2-statistics of the ordered-logit model

Pseudo R^2	**Cox & Snell**	**Nagelkerke**	**McFadden**
Logit-connection	0.546	0.584	0.289

Correlation between accreditation and other forms of quality management

In order to test our hypotheses about the relationship between international accreditations and the other forms of quality management, we need to look at the correlations among our independent factors (see table 6). The results show that international accreditations are strongly correlated with feedback processes, but there is no correlation with the implementation of a quality management system.

Table 6: Correlation matrix

	Rank	Int. Ac.	Nat. Ac.	Q. man.	Feedb.	Stud.	Budget	PhD
Int. Ac.	0.424***							
Nat. Ac.	0.072	-0.146						
Q. man.	0.137	0.133	0.111					
Feedb.	0.322***	0.302***	0.036	0.178*				
Stud.	0.442***	0.182**	0.044	0.020	0.160*			
Budget	0.436***	0.288***	0.006	0.163*	0.071	0.020		
PhD	0.297**	-0.302***	0.258***	-0.025	-0.070	0.236**	0.245***	
Ex. Ed.	0.323***	0.112	0.181*	0.119	0.045	-0.041	0.319***	0.237**

Significance levels: * < 0.1, ** < 0.05, *** < 0.01

Discussion of the findings

Our results indicate that the presence of one or two international accreditations significantly enhances a business school's ranking position. Empirical evidence thus supports our *first hypothesis* and confirms that international accreditations may contribute to higher research performance. It is not only AACSB and EQUIS's branding effect that improves a business

school's reputation. International accreditations may influence reputation indirectly through their positive effect on research performance and ranking positions (Bowman and Bastedo 2011). As expected, the same argument does not apply for national accreditations. Nationally accredited business schools do not perform better than others, which supports our *second hypothesis*.

Our analysis did not provide any empirical evidence for the effect of a quality management system on the business schools' research performance and *hypothesis 3a* could not be confirmed. This result reflects some of the critical literature on quality management (see for example Lomas 2004, Temple 2005). Among other possibilities, it could be that positive effects of quality management systems, such as increased efficiency of organizational processes and higher transparency (Stensaker 2003) may be outweighed by expanded bureaucratization (Kogan et al 2000). Moreover, quality management systems do not necessary contribute to strategy development or improve a business school's attractiveness for renowned researchers and external research partners. However, these effects may indeed be among the key factors that explain the positive impact of international accreditations on research performance (Romero 2008, Lejeune and Vas 2008). As our factors for the implementation of a quality management system and the acquisition of an international accreditation are not significantly correlated, we did not find any empirical evidence for *hypothesis 3b*. Business schools do not necessarily need to implement formal quality management instruments in research in order to be accredited.

Beyond the effects of international accreditations, internal feedback loops for research projects significantly influence a business school's ranking position. Our analysis thus supports *hypothesis 4a* and confirms the importance of faculty members evaluating one another's research projects as a form of quality management (Kaufmann 2009). As predicted in *hypothesis 4b*, these feedback loops are also positively correlated to international accreditations. Empirical evidence thus supports the assumption that international accreditations foster faculty integration and cooperation within business schools (Lejeune and Vas 2008). In order to test if feedback loops act as a mediating variable on the relationship between accreditation and research performance, we calculated the ordered-logit regression without the corresponding factor. In this case, the effect of international accreditations was stronger, which confirms the mediating effect of feedback loops.

Among the control variables, all of our factors proved to be significantly related to research performance in the expected way. As hypothesized, a business school's size and the relative amount of resources positively affect its position in the SSRN ranking. Moreover, the number of students and the budget-per-student variables are positively correlated to the achievement of international accreditations. Bigger and richer business schools are thus more likely to be accredited. That business schools with a PhD program exhibit a higher research performance is not surprising, as they are more likely to focus on their research activities. Finally, the positive and significant regression coefficient for our Executive Education variable is interesting. It supports the hypothesis that the offer of Executive Education programs contributes to the research performance of a business school (Tushman et al. 2007).

Methodological discussion

In order to assess the validity of our empirical results, we briefly discuss possible problems of the methodological approach used. A central problem in most regression analyses is endogenity. An independent variable is said to be endogenous when it correlates with the error term, which reflects the deviation of the sample from the expected value. Possible reasons for endogenity in statistical models may be omitted variables, measurement errors or sample selection errors. In our analysis we could not consider the knowledge and skills of the academic personnel directly, which is likely to have a relevant impact on research performance and accreditation (Liefner 2003). Contrarily, it is less likely that systematic measurement errors occurred. The survey questions all clearly related to aspects of quality management, and should not have measured other factors that influence research performance. Finally, although our final sample was very heterogeneous, we cannot exclude that sample selection errors may have occurred. As aggregate data on all business schools in the SSRN ranking was not available, we could not test how well our sample represents the overall population.

Another problem that has to be addressed is causality. Our ordered-logit model does not indicate precisely if it is the supposedly independent variable which affects the dependent one or vice versa. Causality may be a problem especially in the case of international accreditations. As higher education institutions must meet specific standards of education and research in order to be accredited, research performance may influence the probability of achieving an accreditation. However, our theoretical considerations regarding the effect of accreditations

on research performance are all plausible and we expect that causality works at least in both directions. As for the other forms of quality management, causality issues play a minor role. It is rather improbable that research performance, as measured in terms of SSRN ranking positions, directly influences the probability of introducing a quality management system or implementing regular feedback loops for research projects.

CONCLUSIONS

The aim of this study was to provide quantitative empirical evidence for the effects of international accreditations and quality management on the research performance of higher education institutions. Using results from an international survey among business school leaders, we analyzed how the achievement of an AACSB and/or an EQUIS accreditation influences a business school's ranking position, as compared to other forms of quality management. While international accreditations proved to be positively and significantly related to research performance, we did not find any empirical evidence for the effect of national accreditations or the implementation of quality management systems. This leads us to the conclusion that international accreditations provide specific incentives that may lead to higher research performance. In order to be accredited, business schools need to comply with high standards, including a clear mission statement and coherent strategy, high quality of faculty, and the development of external cooperations with other academic institutions and with the corporate world. Many quality management systems do not cover these areas and focus instead on data collection, organizational effectiveness, and control, which seem to be less relevant for increasing a business school's research performance. Moreover, higher education institutions do often implement internal quality management systems on their own, adopting models from the business world without exactly knowing how to manage them. Our results demonstrate the importance of professional coaching in quality management, which is characteristic of international accreditations.

Our analysis also confirmed the importance of feedback loops in the form of internal evaluations of research projects by faculty members. Such feedback loops proved to be positively related not only to research performance, but also to international accreditations and other quality management approaches. This indicates that both international accreditations and the implementation of a quality management system may favor integration

and collaboration within a business school, which in turn increases research performance. Moreover, the positive and significant coefficient of our Executive Education factor points to the role of external contacts with the corporate world for a business school's ability to conduct productive and relevant research. Executive Education may also influence research performance by providing additional financial resources. This is reflected in the positive correlation between the factor for Executive Education and budget per student.

This study represents a first attempt at dealing with questions regarding the effects of international accreditations in a quantitative empirical way and from a broad international perspective. This analysis focuses on business schools and its results cannot be generalized for other types of higher education institutions. Further contributions might analyze the impact of accreditations and quality management in other contexts and in single countries or regions. It would also be interesting to specify the variables used and analyze, for example, differences between AACSB and EQUIS accreditations. Moreover, a further differentiation of quality management systems is needed. Both national quality assurance systems and internal quality management approaches vary greatly among countries and higher education institutions (Billing 2004, Houston 2008). A new survey thus needs to include specific definitions and explanations in order to better distinguish different approaches to quality management and account for the existing diversity.

Finally, we are aware that the present analysis focused on research performance and that not much can be said about the effects of international accreditations and quality management on teaching and learning. Future work certainly needs to empirically investigate how different forms of quality management influence the quality of teaching and learning. However, the importance of research should not be underestimated. In the context of increasing international competition, research performance has become a central factor influencing a higher education institution's reputation and its ability to successfully recruit the best students and highly qualified faculty. Given the high costs associated with different forms of quality management, it is important to identify which approaches lead to the best results. According to our findings, applying for an international accreditation is a useful form of quality management if an increase in research performance and thus reputation is the goal to be achieved.

ENDNOTES

[1] With the Bologna Declaration of 1999 European governments committed to stronger cooperation in quality assurance of higher education (van der Wende 2000). Consequently, the European Association for Quality Assurance (ENQA) was established, which sets standards and formulates guidelines for quality assurance in the European higher education area (ENQA 2009).

[2] For a discussion of Total Quality Management in higher Education, see Wiklund et al. (2003). For the EFQM Excellence Model see Steed et al. (2005), and for the ISO 9000 standards and the Malcolm Baldrige Criteria see Grant et al. (2004).

[3] In order to assess whether the results of the SSRN Top 1000 Business School Ranking are consistent with the ARWU, we calculated the correlation between the positions of those institutions included in both rankings. The correlation between the SSRN Ranking and the ARWU proved positive and highly significant.

[4] The list of higher education institutions which were invited to participate was issued on the basis of the *SSRN Top Business School Ranking* in June 2010.

[5] In order to allow for international comparisons, we converted all currencies to U.S. dollars. However, purchasing power parity was not considered.

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